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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

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| IN RE APPLICATION OF | : |
| ROLAND EDELMANN, ET AL. | : EXAMINER: TOSCANO, ALICIA |
| SERIAL NO: 10/563,022 | : |
| FILED: NOVEMBER 21, 2006 | : GROUP ART UNIT: 1766 |
| FOR: SILANE FORMULATION WITH HIGH FILLER CONTENT | : |

# APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal of the Final Rejection dated February 7, 2011. A Notice of Appeal was timely filed on July 7, 2011.

## I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Degussa AG, having an address of Bennigsenplatz 1, Duesseldorf, Germany, 40474.

## II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF THE CLAIMS

Claims 1-23 stand twice rejected and are herein appealed.

## IV. STATUS OF THE AMENDMENTS

No Amendment under 37 CFR 1.116 has been filed. A Request for Reconsideration was filed May 5, 2011.

## V. SUMMARY OF THE CLAIMED SUBJECT MATTER

It is preliminarily noted that references in brackets are to page and line number of the specification as filed.

Independent Claim 1 provides a formulation comprising:

(i) at least one organoalkoxysilane and/or at least one organoalkoxysiloxane [page 3, lines 7-8] solvent [page 3, line 2];

(ii) at least one inorganic oxidic powder [page 3, lines 8-9];

from 0.001 to < 0.8 mole of water per mole of Si in (i) [page 5, line 27] and

(iii), optionally, an organic or inorganic acid [page 3, line9];

wherein

the formulation is a liquid dispersion [page 7, line 23] having a viscosity of less than 1500 mPa·s [page 3, lines 12-13]

a content of the at least one inorganic oxidic powder (ii) is from 5 to 50% by weight of the liquid formulation [page 3, line 10], and

a weight ratio of the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane to the at least one inorganic oxidic powder is from 19:1 to 3:2 [page 7, lines 4-5].

Claims 2-9 and 21-23 depend from Claim 1 and stand or fall with the independent claim.

Independent Claim 10 provides a process for preparing a formulation, comprising:

- combining (i) at least one organoalkoxysilane and/or at least one organoalkoxysiloxane, (ii) at least one inorganic oxidic powder, and optionally a wetting agent component (iv) [page 5, line 26],

- adding from 0.001 to < 0.8 mole of water per mole of Si in (i) to the combination of (i), (ii) and optional (iv), optionally with a catalytic amount of an organic or inorganic acid (iii) [page 5, lines 27-31], and

- intensely dispersing the mixture [page 5, line 32],

wherein

the formulation comprises:

(i) the at least one organoalkoxysilane and/or the at least one organoalkoxysiloxane as a solvent [page 3, lines 2-8];

(ii) the at least one inorganic oxidic powder;

(iii), optionally, an organic or inorganic acid,

(iv), optionally, the wetting agent,

a content of the at least one inorganic oxidic powder (ii) is from 5 to 50% by weight of the formulation [page 3, line 10],

a weight ratio of the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane to the at least one inorganic oxidic powder is from 19:1 to 3:2 [page 7, lines 4-5]

and

a viscosity of the formulation is less than 1500 mPa·s [page 3, lines12-13].

Claims 11-13, 16-18 and 20 depend from Claim 10 and stand or fall with the independent claim.

Claim 14 depends from claim 10 and recites that from 0.05 to 0.5 mole of water is added per mole of Si in the (i) at least one organoalkoxysilane and/or at least one organoalkoxysiloxane [page 5, line 28].

Claim 15 depends from Claim 10 and further provides addition of a catalytic amount of organic or inorganic acid, wherein the added organic or inorganic acid is selected from the group consisting of acetic acid, acrylic acid and maleic acid, and

an amount of the added acid is from 10 to 3500 ppm by weight based on the amount of (i) the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane in the formulation [page 7, lines 7-12].

Claim 19 depends from Claim 10 and further comprises adjusting the formulation to a pH of from 2 to 7 by adding the optional organic or inorganic acid [page 7, lines 27-28].

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

### Ground A

Claims 1-14 and 16-23 are twice rejected under 35 U.S.C. 103(a) as being unpatentable over Mehnert et al. (U.S. 2003/0008974, equivalent to U.S. 6,830,816)(Mehnert).

Ground B

Claims 1-23 are twice rejected under 35 U.S.C. 103(a) as being unpatentable over Edelmann et al. (U.S. 2002/0197457 or U.S. 6,699,586)(Edelmann).

Ground C

Claims 15 and 19 are twice rejected under 35 U.S.C. 103(a) as being unpatentable over Mehnert et al. (U.S. 2003/0008974, equivalent to U.S. 6,830,816)(Mehnert) in view of Hardman et al. (U.S. 4,329,273) (Hardman).

Ground D

Claims 1-23 are twice rejected on the ground of nonstatutory obviousness-type double patenting over Claims 1, 12, 21 of U.S. 6,830,816 (Mehnert) in view of U.S. 4,329,273 (Hardman).

Ground E

Claims 1-23 are twice rejected on the ground of nonstatutory obviousness-type double patenting over Claims 1, 12, 21 of U.S. 6,699,586 (Edelmann).

## VII. ARGUMENT

Ground A

Rejection of Claims 1-14 and 16-23 under 35 U.S.C. 103(a) over Mehnert et al. (U.S. 2003/0008974, equivalent to U.S. 6,830,816)(Mehnert).

Claims 1-9

The invention according to Claim 1 provides a formulation containing inorganic oxidic powders having a size as small as a nanometer range in a solvent of at least one organoalkoxysilane or organoalkoxysiloxane, which is compatible with and useful for incorporating inorganic oxidic powders into alkoxysilane formulations and products. The formulation is storage stable for as long as one year (page 10, lines 6-7).

Appellants have described the claimed formulation as follows (page 2, beginning at line 9):

> Systems obtained in this way are generally clear, transparent to opalescent, **readily pourable liquids** having a comparatively low viscosity and a hitherto unknown, extremely high solids content.
>
> Furthermore, formulations of the invention advantageously can be diluted as desired with an organic solvent or solvent mixtures, e.g., alcohols or esters.
>
> In addition, systems of the invention are substantially **storage-stable liquids** having a storage stability of in general from 6 to 12 months at room temperature.

Mehnert describes a composition containing a **capsule of a metal oxide core and a silico-organic shell in a synthetic resin** (Claim 1). The composition is described as a paste (see for example, Col 5, lines 42 and 59) and nowhere is a composition being a liquid dispersion having a viscosity of less than 1500 mPa·s described.

The Office has cited the description of Mehnert (Col. 5, beginning at line 49) as inherently forming a dispersion according to Claim 1 (Office Action dated September 10, 2010, page 4, section 9). However, this is an erroneous conclusion because the concentrate Mehnert dilutes is a paste containing **1 to 6 mole of water per mole of Si** (Col. 13, lines 55-58) and in the paste the organofunctional silane component has been substantially completely hydrolyzed and condensed to form the capsule shell (see formula (1a), Col. 3, line 7). The Abstract describes a "substantially complete, silico-organic shell" and in Col. 14, lines 20-33,

Mehnert discloses removal of the alcohol formed during the hydrolysis and condensation reaction of the organofunctional silane component. Such alcohol removal promotes the condensation and provides for the substantially complete shell formation thus depleting the organofunctional silane component. Moreover, in each of Examples 1 and 2 Mehnert describes:

> To achieve extensive hydrolytic condensation of the silane and removal of methanol/water, the kneading process was continued for another two hours at 65 to 70°C under reduced pressure . . .

Consequently, the paste prepared by Mehnert cannot contain 0.001 to less than 0.8 mole of water per mole of Si or a **solvent** of organoalkoxysilane and/or organoalkoxysiloxane in a weight ratio 19:1 to 3:2 to the inorganic oxide as recited in Claim 1. The solvent employed in the Mehnert lacquer compositions is an acrylate (see Col. 5, lines 49-50 and Examples 3.1, 3.2 and 3.3).

The Office has pointed to Claim 21 of US 6,830,816 with regard to the molar quantity of water. This claim must be understood in light of the specification, which clearly requires 1 to 6 mole of water per mole of Si (Col. 13, lines 55-58). In the paragraph immediately following the cited description, Mehnert describes the use of 0.5 to 6 moles of water **per mole of hydrolysable Si-bound group**. According to formula (II) of Mehnert:

$$R^1_sR^2_rSiY_{(4-r-s)}$$

Y is a hydrolysable group and from 1 to 3 Y groups may present in formula (II). Therefore, if more than one Y group is present, the moles of water per Y group can be less than 1 and still 1 mole of water per Si be employed as required in Col. 13, lines 55-58.

As described above, the Mehnert lacquer 1) does not contain 0.001 to less than 0.8 mole of water per mole of Si or 2) a solvent of organoalkoxysilane and/or organoalkoxysiloxane in a weight ratio 19:1 to 3:2 to the inorganic oxide as recited in Claim 1. Accordingly, this reference does not make all the elements of Claim 1 known and a

conclusion of obviousness cannot be supported. Therefore, the rejection of Claims 1-9 under 35 U.S.C. 103(a) over Mehnert should be reversed.

Claims 10-13, 16-18 and 20

Mehnert describes that the reaction to prepare the described paste composition having good homogeneity requires special equipment which can handle a paste (Col. 5, lines 27-38) and further describes the equipment as follows (Col. 9, lines 1-6):

> In the present invention, kneading machines are to be understood as processing units which, besides the usual mixing effect, have a kneading effect and possibly an additional dispersing effect, or in other words effects that contribute to homogenization of the highly filled synthetic resin mass.

As described above, Mehnert adds 1 to 6 mole of water per mole of Si (Col. 13, lines 55-58) and in the process to prepare the paste the organofunctional silane component has is substantially completely hydrolyzed and condensed to form the capsule shell. Mehnert further discloses removal of the alcohol formed during the hydrolysis and condensation reaction of the organofunctional silane component.

In contrast according to the process of Claim 10, only from 0.001 to < 0.8 mole of water per mole of Si is added, the formulation comprises a solvent of the at least one organoalkoxysilane and/or the at least one organoalkoxysiloxane and a weight ratio of the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane to the at least one inorganic oxidic powder is from 19:1 to 3:2. As Mehnert does not make any of these elements known, a conclusion of obviousness over this reference cannot be supported and the rejection of Claims 10-13, 16-18, 20 and 21 under 35 U.S.C. 103(a) over Mehnert should be reversed.

Claim 14

Claim 14 depends from Claim 10 and recites addition of from **0.05 to 0.5 mole of water** per mole of Si. Mehnert requires a "well defined quantity of water" of 1 to 6 mole of water per mole of Si (Col. 13, lines 55-58) and therefore, not only does not make the water amount according to Claim 14 known, but actually teaches away from the amount according to Claim 14. Accordingly, the rejection of Claim 14 under 35 U.S.C. 103(a) over Mehnert should be reversed.

Claim 19

Mehnert is silent with respect to pH adjustment or a pH of the paste. As the water is removed or consumed in the process as described above and an acrylate solvent is employed, a pH value would be meaningless and difficult to obtain. Accordingly, the rejection of Claim 19 under 35 U.S.C. 103(a) over Mehnert should be reversed.

In view of all the above, all rejections of record under 35 U.S.C. 103(a) over Mehnert should be reversed.

Ground B

Rejection of Claims 1-23 under 35 U.S.C. 103(a) over Edelmann et al. (U.S. 2002/0197457 or U.S. 6,699,586)(Edelmann).

Claims 1-9

Edelmann describes an organosilicon system containing nanoscale and/or microscale oxidic particles having an **organosilicon shell** which is directly prepared in a synthetic resin (Abstract, '586). Edelmann describes the following (Col. 3, lines 11-15):

> Furthermore, the present process produces oxide particles with a substantially **complete and multilayer organosilicon shell**, i.e., cores A which, directly and advantageously, are obtained in finely dispersed form

> in a curable synthetic resin or precursor of a curable synthetic resin. . . (Bold added)

Nowhere does Edelmann describe a composition being a liquid dispersion having at least one organoalkoxysilane and/or at least one organoalkoxysiloxane as a **solvent** and having a viscosity of less than 1500 mPa·s.

In each of Examples 1-8 according to the Edelmann method, in excess of a 2/1 mole ratio of water to Si is employed in accordance with the Edelmann description in Col. 9, lines 19-22, as follows:

> The reaction of the invention takes place generally in the presence of a well defined amount of water. For this purpose it is suitable to use from 1 to 6 mol of water per mole of Si of the organosilicon component.

Further, in each of Examples 1-7, Edelmann describes that methanol formed as a result of silane hydrolysis (condensation) is distilled off under reduced pressure. This is the same procedure described by Mehnert to form his shell structure. The excess of water is necessary to obtain complete condensation. The solvent of the Edelmann system is the synthetic resin and as a result of hydrolysis and condensation the organosilane is not available to act as solvent. Nowhere does Edelmann disclose or suggest the composition according to the present invention comprising at least one inorganic oxidic powder in at least one organoalkoxysilane and/or at least one organoalkoxysiloxane solvent as alleged by the Office.

In contrast, the invention according to Claim 1, contains a mole deficiency of water relative to Si. As a result, organoalkoxysilane and/or organoalkoxysiloxane remains available to perform as solvent for the formulation.

As described above, Edelmann does not make all the elements of Claim 1 known and therefore, a conclusion of obviousness cannot be supported. Accordingly, the rejection of Claims 1-9 under 35 U.S.C. 103(a) over Edelmann should be reversed.

Claims 10-13, 16-18, 20 and 21

As described above, Edelmann describes reaction in a well defined amount of water which is 1 to 6 moles of water per mole of Si and demonstrates this molar water excess in each of Examples 1-8, according to the invention.

Claim 18 of US 6,699,586 must also be understood in light of the specification, which clearly requires 1 to 6 mole of water per mole of Si (Col. 9, lines 19-22). In the paragraph immediately following the cited description, Edelmann describes the use of 0.5 to 6 moles of water **per mole of hydrolysable Si-bonded group**. According to formula (II) of Edelmann:

$$R^1_sR^2_rSiY_{(4-r-s)}$$

Y is a hydrolysable group and from 1 to 3 Y groups may present in formula (II). Therefore, if more than one Y group is present, the moles of water per Y group can be less than 1 and still 1 mole of water per Si be employed as required in Col.9, lines 19-22.

Edelmann clearly describes his organosilicon microhybrid system as containing a organosilicon shell B (Claim 1, US 6,699,586). In order to form the shell, amolar excess of water to Si is required and as described above for Mehnert, by describing a well-defined amount of water for the reaction as 1 to 6 mole of water per mole of Si, Edelmann also teaches away from the molar deficiency according to Claim 10.

As shown above, Edelmann does not make all the elements of Claim 10 known and a conclusion of obviousness cannot be supported. Accordingly, the rejection of Claims 10-13, 16-18, 20 and 21 under 35 U.S.C. 103(a) over Edelmann should be reversed.

Claim 14

Claim 14 depends from Claim 10 and recites addition of from **0.05 to 0.5 mole of water** per mole of Si. Edelmann requires a "well defined quantity of water" of 1 to 6 mole of

water per mole of Si (Col.9, lines 19-22) and therefore, not only does not make the water amount according to Claim 14 known, but actually teaches away from the amount according to Claim 14. Accordingly, the rejection of Claim 14 under 35 U.S.C. 103(a) over Edelmann should be reversed.

Claim 19

Like Mehnert, Edelmann is silent with respect to pH adjustment or a pH of the formulation. As the water is removed or consumed in the process as described above and an acrylate resin solvent is employed, a pH value would be meaningless and difficult to obtain. Accordingly, the rejection of Claim 19 under 35 U.S.C. 103(a) over Edelmann should be reversed.

In view of all the above, all rejections of record under 35 U.S.C. 103(a) over Edelmann should be reversed.

Ground C

Rejection of Claims 15 and 19 under 35 U.S.C. 103(a) over Mehnert in view of Hardman et al. (U.S. 4,329,273) (Hardman).

Claim 15

Claim 15 depends from Claim 10 and further provides addition of a catalytic amount of organic or inorganic acid, wherein the added organic or inorganic acid is selected from the group consisting of acetic acid, acrylic acid and maleic acid. Further Claim 15 recites that the amount of the added acid is from 10 to 3500 ppm by weight based on the amount of (i) the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane in the formulation.

The failure of the Office to support an obviousness rejection over Mehnert is described above. Claim 15 depends from Claim 10 and therefore includes all the description of the independent claim.

Hardman describes an elastomeric silicone rubber composition retained in two parts (see Col. 14, lines 34 to Col. 15, line 5) containing a vinyl-terminated polysiloxane polymer, a hydride siloxane cross-linking agent, a platinum catalyst and a partial hydrolysis product of an aliphatically unsaturated hydrolysable alkoxy silane (Abstract). The Office cites the secondary reference to show use of a specific content of water in siloxane hydrolysis. Hardman is directed to preparation of a vinyl-terminated siloxane of specific molecular weight and degree and extent of polymerization (see Col. 4, lines 32 to 48) for performance in a self-bonding formulation. Nowhere does this reference disclose or suggest formation of a core-shell capsule as described by Mehnert. Therefore, the two references are directed to different technologies having different problems and one of ordinary skill in the art would not look to the description of Hardman to address a problem in formation of core-shell capsules.

Mehnert requires a substantially complete, silico-organic shell and defines 1 to 6 mole of water per mole of Si (Col. 13, lines 55-58) as a well defined amount of water to obtain the capsule shell. Hardman describes partial hydrolyzates. The Office has not explained why one of ordinary skill in the art would modify the process of Mehnert to only partially hydrolyze the organosilane when such modification would not lead to a substantially complete, silico-organic shell as required by the primary reference.

In a Precedential Opinion rendered by the Board of Patent Appeals and Interferences in *Ex parte* Whalen II (Appeal 2007-4423, Application 10/281,142) on July 23, 2008, the Board stated:

> The KSR Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some "apparent reason to combine the known elements in the fashion claimed."
>
> The Examiner has not persuasively explained why a person of ordinary skill in the art would have had a reason to modify the compositions taught by Evans, Greff'767, or Taki in a way that would result in the compositions defined by the claims on appeal. Therefore, The Examiner has not made out a prima facie case of obviousness under 35 U.S.C. § 103.

Hardman does not disclose or suggest a composition being a liquid dispersion having at least one organoalkoxysilane and/or at least one organoalkoxysiloxane as a solvent. Therefore, the combined descriptions of Mehnert and Hardman does not make all the elements of the invention known, and a conclusion of obviousness over the cited reference combination cannot be supported. Accordingly, the rejection of Claim 15 under 35 U.S.C. 103(a) over Mehnert in view of Hardman should be reversed.

Claim 19

As described previously Mehnert is directed to a paste for formulation of a lacquer. After completion of shell formation, Mehnert describes removal of water and alcohol via distillation under reduced pressure. The Office points to the description of Col. 8, lines 25-30 as showing the use of acids such as hydrochloric and acetic acid. However, a careful reading of the entirety of Col. 8 shows that partial hydrolysis is the objective of the description. Hardman indicates that when a reduced molar amount of water is employed as necessary to achieve only partial hydrolysis, adding acid increases the rate of the reaction.

The Office has not explained why one of ordinary skill would modify the process of Mehnert by adding acid. According to the Mehnert examples, reactions were complete in

less than three hours. In contrast, Hardmann notes that partial hydrolysis in the absence of acid requires reaction times greater than 12 hours. As indicated above, Mehnert requires substantially complete shell formation. The Office has not provided any logical explanation of why one of ordinary skill in the art would modify the Mehnert shell to be incomplete and thus have need to add acid to speed the rate of a partial hydrolysis reaction. Therefore, the Office has not met the burden necessary to support a conclusion of obviousness and the rejection of Claim 19 under 35 U.S.C. 103(a) over Mehnert in view of Hardman should be reversed.

Ground D

Rejection of Claims 1-23 on the ground of nonstatutory obviousness-type double patenting over Claims 1, 12, 21 of U.S. 6,830,816 (Mehnert) in view of U.S. 4,329,273 (Hardman).

The failure of the Office to meet the burden necessary to support a conclusion of obviousness over the description of Mehnert in view of Hardman has been described in the previous paragraphs.

Therefore, on the basis of this argument the rejection of Claims 1-23 on the ground of nonstatutory obviousness-type double patenting over Claims 1, 12, 21 of U.S. 6,830,816 (Mehnert) in view of U.S. 4,329,273 (Hardman) should be reversed.

Ground E

Rejection of Claims 1-23 on the ground of nonstatutory obviousness-type double patenting over Claims 2, 4, 8,11, 13 14 and 18 of U.S. 6,699,586 (Edelmann).

The failure of the Office to meet the burden necessary to support a conclusion of obviousness over the description of Edelmann has been described in the discussion of Ground B.

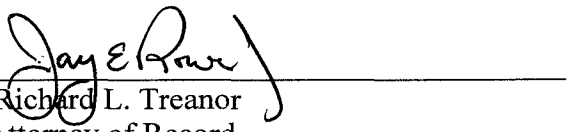
Therefore, on the basis of this argument the rejection of Claims 1-23 on the ground of nonstatutory obviousness-type double patenting over Claims 2, 4, 8,11, 13 14 and 18 of U.S. 6,699,586 (Edelmann) should be reversed.

## CONCLUSION

For all the above reasons, all the outstanding rejections of record should be reversed.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.



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## VIII. CLAIMS APPENDIX

Claim 1 (Rejected): A formulation comprising:

(i) at least one organoalkoxysilane and/or at least one organoalkoxysiloxane solvent;

(ii) at least one inorganic oxidic powder;

from 0.001 to < 0.8 mole of water per mole of Si in (i) and

(iii), optionally, an organic or inorganic acid;

wherein

the formulation is a liquid dispersion having a viscosity of less than 1500 mPa·s,

a content of the at least one inorganic oxidic powder (ii) is from 5 to 50% by weight of the liquid formulation, and

a weight ratio of the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane to the at least one inorganic oxidic powder is from 19:1 to 3:2.

Claim 2 (Rejected): The formulation as claimed in claim 1, further comprising: a wetting assistant (iv).

Claim 3 (Rejected): The formulation as claimed in claim 1, further comprising a diluent or solvent (v).

Claim 4 (Rejected): The formulation as claimed in claim 1,

wherein the organoalkoxysilane is of formula (I)

$$R_a\text{-}Si(OR^1)_{4-a} \qquad (I),$$

wherein

R is independently a linear, cyclic, branched or substituted alkyl group having 1 to 18 carbon atoms or an alkenyl group having 2 to 8 carbon atoms or an aryl group or an alkoxy

group or an acryloyl- or methacryloyloxyalkyl group or an epoxyalkyl group or a glycidyloxyalkyl group or an aminoalkyl group or a fluoroalkyl group or a mercaptoalkyl group or a silylated alkylsulfanealkyl group or a thiocyanatoalkyl group or an isocyanatoalkyl group,

$R^1$ is a linear, branched or cyclic alkyl group having 1 to 6 carbon atoms, and

a is 1 or 2.

Claim 5 (Rejected): The formulation as claimed in, claim 1

wherein the organoalkoxysiloxane is of formula (II)

$$R^2R^3_x(R^4-O)_ySiO_{\frac{(3-x-y)}{2}}(II),$$

wherein

$R^2$ is independently a linear, cyclic, branched or substituted alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 8 carbon atoms, an aryl group, an acryloyl- or methacryloyloxyalkyl group, a glycidyloxyalkyl group, an epoxyalkyl group, a fluoroalkyl group, an aminoalkyl group, a silylated aminoalkyl group, a ureidoalkyl group, a mercaptoalkyl group, a silylated alkylsulfane group, a thiocyanatoalkyl group, an isocyanatoalkyl group or an alkoxy group,

$R^3$ is a linear, cyclic, branched or substituted alkyl group having 1 to 18 carbon atoms,

$R^4$ is a linear, cyclic or branched alkyl group having 1 to 6 carbon atoms,

x is 0 or 1 or 2, and

y is 0 or 1 or 2,

with the proviso that $(x+y) < 3$.

Claim 6 (Rejected): The formulation as claimed in claim 1, wherein the at least one inorganic oxidic powder (ii) comprises a nanoscale powder having an average particle size ($d_{50}$) of less than 1200 nm.

Claim 7 (Rejected): The formulation as claimed in claim 1, wherein the at least one inorganic oxidic powder (ii) comprises a powder selected from the group consisting of silicon oxides, aluminum oxides, and transition metal oxides.

Claim 8 (Rejected): The formulation as claimed in claim 1, further

comprising at least one reaction product of the at least one inorganic oxidic powder and the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane.

Claim 9 (Rejected): The formulation as claimed in claim 1, wherein

a solids content is from 40 to 90% by weight, based on the total weight of the formulation.

Claim 10 (Rejected): A process for preparing a formulation, comprising:

- combining (i) at least one organoalkoxysilane and/or at least one organoalkoxysiloxane, (ii) at least one inorganic oxidic powder, and optionally a wetting agent component (iv),

- adding from 0.001 to < 0.8 mole of water per mole of Si in (i) to the combination of (i), (ii) and optional (iv), optionally with a catalytic amount of an organic or inorganic acid (iii), and

- intensely dispersing the mixture,

wherein

the formulation comprises:

(i) the at least one organoalkoxysilane and/or the at least one organoalkoxysiloxane as a solvent;

(ii) the at least one inorganic oxidic powder;

(iii), optionally, an organic or inorganic acid,

(iv), optionally, the wetting agent,

a content of the at least one inorganic oxidic powder (ii) is from 5 to 50% by weight of the formulation,

a weight ratio of the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane to the at least one inorganic oxidic powder is from 19:1 to 3:2

and

a viscosity of the formulation is less than 1500 mPa·s.

Claim 11 (Rejected): The process as claimed in claim 10, wherein the at least one inorganic oxidic powder (ii) comprises at least one nanoscale inorganic powder selected from the group consisting of silicas, aluminas, transition metal oxides and mixtures thereof.

Claim 12 (Rejected): The process as claimed in claim 10, wherein the at least one organoalkoxysilane is selected from the group consisting of methyltriethoxysilane, methyltrimethoxysilane, n-propyl-trimethoxysilane, n-propyltriethoxysilane, vinyltriethoxysilane, vinyltrimethoxysilane, 3-methacryloxypropyltrimethoxysilane, 3-glycidyloxypropyltrimethoxysilane, 3-glycidyloxypropyltriethoxysilane, tridecafluoro-1,1,2,2-tetrahydrooctyltrimethoxysilane, tridecafluoro-1,1,2,2-tetrahydrooctyltriethoxysilane, 3-aminopropyltrimethoxysilane, N-(n-

butyl)-3-aminopropyltrimethoxysilane, N-(2-aminoethyl)-3-aminopropyltrimethoxysilane, N-(2-aminoethyl)-3-aminopropylmethyldimethoxysilane, bis(3-trimethoxysilylpropyl)amine, 3-mercapto-propyltrimethoxysilane and mixtures thereof.

Claim 13 (Rejected): The process as claimed in claim 10,

wherein the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane is selected from the group consisting of at least one organoalkoxysiloxane of the general formula (II), a mixture of organoalkoxysiloxanes of the general formula II, and a mixture of at least one organoalkoxysilane of the general formula I and organoalkoxysiloxanes of the general formula II.

Claim 14 (Rejected): The process as claimed in claim 10,

wherein from 0.05 to 0.5 mole of water is added per mole of Si in the (i) at least one organoalkoxysilane and/or at least one organoalkoxysiloxane.

Claim 15 (Rejected): The process as claimed in claim 10,

wherein

a catalytic amount of organic or inorganic acid is added,

the added organic or inorganic acid is selected from the group consisting of acetic acid, acrylic acid and maleic acid, and

an amount of the added acid is from 10 to 3500 ppm by weight based on the amount of (i) the at least one organoalkoxysilane and/or at least one organoalkoxysiloxane in the formulation.

Claim 16 (Rejected): The process as claimed in claim 10,

wherein a temperature for dispersing the formulation is from 0 to 80 °C.

Claim 17 (Rejected): The process as claimed in claim 10,

wherein a time for dispersing the liquid is from 10 to 60 minutes.

Claim 18 (Rejected): The process as claimed in claim 10, further comprising:

aftertreating the intensely dispersed mixture,

wherein the aftertreatment comprises stirring for a period of from 1 to 8 hours at a temperature of from 30 to 80 °C.

Claim 19 (Rejected): The process as claimed in claim 10, further comprising:

adjusting the formulation to a pH of from 2 to 7 by adding the optional organic or inorganic acid.

Claim 20 (Rejected): A formulation obtained by the process as claimed in claim 10.

Claim 21 (Rejected): A method, comprising adding to a composition or applying to a substrate the formulation as claimed in claim 1, wherein the method is for preparing a composition or forming a substrate for an application selected from the group of applications consisting of scratch resistance, abrasion resistance, corrosion protection, easy-to-clean applications, barrier applications, electronics, surface treatment of circuit boards, an insulating layer, a release layer, coating of the surface of solar cells, a glass fiber size, and homogeneous incorporation of nanoscale powders into systems of other kinds.

Claim 22 (Rejected): A product prepared by a method comprising utilization of the formulation as claimed in claim 1, wherein the product is a plastic, an adhesive, a sealant, a resin base material, an ink and a paint.

Claim 23 (Rejected): A composition, comprising the formulation as claimed in claim 1, wherein the composition is one selected from the group consisting of a resin based material, a plastic, an ink, a paint, an adhesive and a sealant.

Claims 24-25 (Canceled).

## IX. EVIDENCE INDEX

None

## X. RELATED PROCEEDINGS APPENDIX

None